

# **Georgia Department of Natural Resources**

## **Environmental Protection Division**

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SOP 2-023 Rev. 2

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### **Metals Lab Standard Login Procedure**

Access to this SOP shall be available within the laboratory for reference purposes; the official copy of this SOP resides on the official Georgia EPD website at <https://epd.georgia.gov/about-us/epd-laboratory-operations>. Printed copies of this SOP will contain a watermark indicating the copy is an uncontrolled copy.

#### **1 Scope and Application**

1.1 This sop outlines the proper procedure utilized in the log in of standards for the determination of total recoverable metals in groundwater, surface waters, drinking waters, wastewaters, soils, sludge, and sediments. These standards include stock standards used to generate internal standards, calibration standards, ICV, MDL, IDF/CDF, and matrix spike standards. Upon completion of standard preparation each standard must be entered into the standard logbook. As per QA requirements all standards utilized must be easily traceable and accounted for at all times.

#### **1.2 Restricted Procedure**

This procedure is restricted to use by an analyst experienced in the handling of hazardous materials. Additionally, the analyst must complete the requirements of the GaEPD Initial Demonstration of Analyst Proficiency prior to the analysis of actual samples. Analysts are further warned that performance of this analysis involves the use of potentially hazardous chemicals; refer to the GaEPD Chemical Hygiene Plan for additional information regarding chemicals required by this method.

#### **2 Definitions**

- 2.1 Refer to Chapter 3 of the Georgia EPD Laboratory Quality Assurance Manual for Quality Control Definitions.
- 2.2 Stock Standard- Any standard generated directly from an undiluted vendor standard.
- 2.3 Working Standard- any standard generated from a stock standard.

#### **3 Interferences**

Not applicable

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- 4 Safety
  - 4.1 Refer to Laboratory Chemical Hygiene Plan, Revision 1 February 28, 1999
- 5 Apparatus and Equipment
  - 5.1 Metals standard preparation logbook designated to applicable method.
- 6 Reagents and Standards  
Not applicable.
- 7 Sample Collection  
Not applicable.
- 8 Calibration
  - 8.1 Calibration Curve  
Not applicable.
  - 8.2 Calibration Verification  
Not applicable
- 9 Quality Control - Refer to analytical method
- 10 Procedure
  - 10.1 Stock Standards:
    - 10.1.1 Designate a standard ID for the standard being prepared. This number is the next available number in the logbook.
    - 10.1.2 The standard name is denoted per method and can be found in the method SOP.
    - 10.1.3 The standard manufacturer is the company that the standard comes from. Note that some bottles are designated with an "A" or "B", this should be accounted for in this section. If the standard is an individual metal then the name of that metal should be listed next to the manufacturer. For example, a single element Silver standard from Spex would be named: "Spex-Ag", and a multicomponent cocktail from High Purity would be called: "High Purity-Interference Check Standard A".
    - 10.1.4 The lot number is located on the bottle.
    - 10.1.5 Stock standards with a concentration greater than or equal to 1ppm expire two months from the date of preparation; stock standards with a concentration less than 1ppm expire two weeks from the date of preparation. Concentrated acids and solid reagents expire one year after opening; therefore each container gets a standard number upon opening.
    - 10.1.6 Stock concentrations are located on the standard bottle. Some standards contain a mixture of components and might have various element concentrations. List the primary concentration on the first line, then subsequent elements and their concentration on the lines below. For example, EPA 200.8 Stock is primarily 1000ug/ml, but Se is 5000ug/ml and Ag is 200ug/ml. The first line of this standard would be: EPA 200.8 Stock and 1000ug/ml for the concentration. The next line would be: Se 5000ug/ml, and the third line: Ag 200ug/ml. All lines belong to the same standard number. If a bottle has an "A" or "B", list which bottle the element

is in under the section titled manufacturer. The stock standard log in should be as specific as possible so standards generated from this stock can be easily reviewed and understood. All concentrations must be written with a numeric value.

- 10.1.7 The vol/mass section is the volume (in mL) that is being spiked into the final solvent.
- 10.1.8 The dilution section is the final volume (in mL).
- 10.1.9 The final concentration is the final concentration of the solution prepared. Record the actual solution units: do not use ppm or ppb, use ug/L, mg/Kg, etc.
- 10.1.10 Record the diluent standard number, or milli Q water if that is the sole diluent.
- 10.1.11 Enter the date and your initials.
- 10.2 Working Standards: The procedure required for the login of working standards is identical to that of stock standards with two exceptions.
- 10.2.1 The stock standard concentration must account for any variations in analyte concentration. List the primary concentration of the working standard first then dash and the word "varies" to show that the stock concentration is primarily a certain concentration with the exception of a few analytes. For example, a standard with a primary, but not only, concentration of 50ug/L would be recorded as 50ug/L-varies. The word varies indicates that there are other concentrations in the solution. These concentrations can be found by referring to the original stock entry in the logbook.
- 10.2.2 The final concentration section follows the same guidelines as above. List the primary final concentration first then dash and the word "varies".

- 11 Evaluation of the Linearity of the Initial Calibration  
Not applicable.
- 12 References  
Not applicable
- 13 Practical Quantitation Limits (PQLs), Precision and Accuracy Criteria, and Quality Control Approach  
Not applicable